$\leftarrow -250t$

Plane

$x = -250t$

$y = 0$

Wind

$x = 20t\cos 45$

$y = 20t\sin 45$

bearing = heading

starts N.

clockwise

Total

distance = rate × time

$x = -250t + 20t\cos 45°$

$y = -20t\sin 45°$

$-1000 = -250t + 20t\cos 45°$

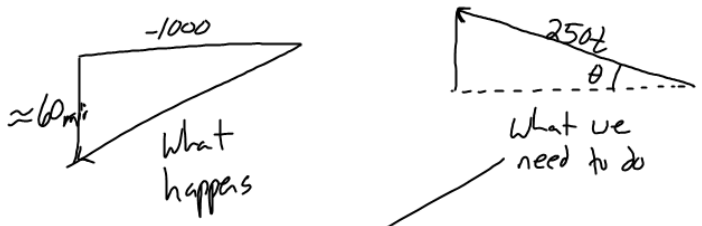
$-1000 = t(-250 + 20\cos 45)$

$\frac{-1000}{(-250 + 20\cos 45)} = \frac{t(-250 + 20\cos 45)}{(-250 + 20\cos 45)}$

$t = 4.24 \text{ hrs}$

$y = -20(4.24)\sin 45$

≈ -60 south



what we need to do

Plane

$X = -250t\cos\theta$

$Y = 250t\sin\theta$

Wind

$X = 20t\cos 45$

$y = -20t\sin 45$

Total

$X = -250t\cos\theta + 20t\cos 45$

$Y = 250t\sin\theta + -20t\sin 45$

$0 = 250t\sin\theta + -20t\sin 45$

$+20t\sin 45 \qquad +20t\sin 45$

$\sqrt{x}^2 = x$

$\sin^{-1}(\sin(x)) = x$

$\frac{20t\sin 45}{250t} = \frac{250t\sin\theta}{250t}$

$0.08\sin 45 = \sin\theta$

$\sin^{-1} \qquad \sin^{-1}$

$\theta = \sin^{-1}(0.08\sin 45)$

$\theta = 3.243$

Sect. 6.6

#1, 2, 4